This document provides suggestions for projects and/or themes that cross multiple disciplines. The projects and themes on this are suggestions from Educator Effectiveness Academy participants and stakeholders from around the state. High school STEM curriculum developers may modify ideas or create their own.

| **Project and/or Theme Ideas**  (complex question, global issue, challenge, or real-world problem) | **Overview** |
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| 1. Complex Question: What are the impacts of gentrification on a community? | This unit aims at helping students develop an understanding of the social, political, economic, health, and environmental impacts of gentrification. Gentrification is the process of renewal and rebuilding accompanying the influx of middle-class or affluent people into deteriorating areas that often displaces poorer residents. Students will investigate gentrification and develop solutions to mitigate the negative effects of gentrification.  \*gentrification definition retrieved from: <http://dictionary.reference.com/browse/gentrification?s=t> |
| 1. Real World Problem: Managing nonnative invasive species | The shifting of global climate patterns has caused species distribution to change. Additionally, travel, trade, and tourism have enhanced the ability of species to invade different locations. Students will develop solutions to the real world problem of managing nonnative invasive species. Nonnative invasive species are defined as those that cause harm to the environment, the economy, and/or human health.  \*nonnative invasive species definition retrieved from <http://www.invasivespecies.gov/home_documents/2008-2012%20National%20Invasive%20Species%20Management%20Plan.pdf> |
| 1. Global Issue: Recession | Students will investigate the global issue of recession. They will examine what constitutes a recession and analyze the social and health issues associated with being in a recession. They will evaluate the impact of recession on different countries and assess government intervention strategies. Students will also analyze and evaluate the global economy, distribution of wealth, and personal management of money. |
| 1. Real World Problem: Demographic Explosion | Overpopulation implies a breach of carrying capacity. Carrying capacities limits the numbers of organisms and populations an ecosystem can support. The human population is growing at an alarming rate. Students will investigate the human demographic explosion and design solutions to prevent overpopulation. |
| 1. Global Issue:   Global Infectious Diseases | Students will investigate the global issue of infectious disease. Drug resistance, hygiene, economic, and environmental factors have encouraged the reemergence and the development of new infectious diseases. Students will analyze different infectious diseases and prevention strategies. |
| 1. Global Issue:   Human Hair for Weaves and Wigs | This unit aims at investigating the ethical, political, biological, chemical, and social issues of using human hair for weaves and wigs. The hair industry is one of the fastest growing industries in the world. The trade and export of human hair has increased significantly over the last few years. The largest population of human hair comes from Hindu Indian women and men who give their hair as a special offering for their God. Their donated hair is sold and exported for use in weaves and wigs around the world. Is this practice ethical? Students can analyze hair structure, the polymers used to treat the hair, supply and demand principals surrounding human hair trade, the exports of goods, and the ethics of profiting from donations. |
| Global Issue:   1. Obesity Epidemic | Students will investigate the global issue of obesity and develop solutions to combat the obesity epidemic. Students can:   * identify the molecular structure and function of various carbohydrates and energy transfer. (Biology) * analyze the supply and demand rations for corn and effect of government subsidies on corn production and consumptions. * use statistics to correlate potential links between high fructose corn syrup and health risks in teenagers. (Statistics) * investigate land use practice an nutrient availability on local ecosystem (Environmental Science) * analyze local school menu nutritional content and compare to other school systems or government funded programs (Health) * evaluate the political and legal implications of corn subsidies. |
| Real World Problem:   1. Cleaning up “Garbage Patches” | Students will develop solutions to clean up eastern and/or western garbage patches. A garbage patch is a concentration of marine debris. There are two areas of garbage patches in the North Pacific ocean. Students will investigate one garbage patch and developing solutions for cleaning it up.  Garbage patch definition taken from <http://marinedebris.noaa.gov/info/pdf/patch.pdf> |
| Challenge:   1. The perfect shot | Students will be challenged to develop strategies to improve shooting percentages of a basketball player. Students will analyze the physics of basketball and use mathematics and science to develop a plan to improve shooting percentages (jump shot, layup, and/or slam dunk) of a basketball player. Students can test their plans using students in physical education classes. |
| Challenge:   1. Designing effective sound barriers | Have you ever been enjoying a nice day in your home only to be disturbed by car riding by blasting its music? Have you ever lived in an apartment, townhome, or dorm room and heard your neighbor’s music? This unit challenges students to design effective and sound barriers to absorb sound waves. |
| Real World Problem:   1. Alternative uses of outdated electronics | Technology is changing at a rapid pace. Students will analyze technological trends and identify what classifies a technological tool as “outdated.” Students will design alternative uses of outdated electronics. |
| Complex Question:   1. Is health care for all a human right? | Health care has been a hot topic during this political session. Students will investigate health care policies from a global perspective and evaluate roles and politics the government has assumed regarding health care policy. Students will also evaluate the cost and accessibility of health care for different populations. |
| Real World Problem:   1. Improving water quality of Maryland Beaches | Student will investigate the water quality of Maryland beaches. The will design a plan to improve the water quality of a selected beach and develop an ad to education people about the water quality of Maryland’s beaches. |
| Real World Problem:   1. Drunk Driving | Students will develop a solution to reduce drunk driving in Maryland. Students will identify factors that influence the use of alcohol and analyze the physical, psychological, social, and legal consequences of alcohol use. |

The following list was taken from *High Noon 20 Global Problems, 20 Years to Solve Them* by Jean-Francois Rischard*.*

1. Global warming
2. Biodiversity and ecosystem losses
3. Fisheries depletion
4. Deforestation
5. Water deficits
6. Maritime safety and pollution
7. Massive step-up in the fight against poverty
8. Peacekeeping, conflict prevention, combating terrorism
9. Education for all
10. Global infectious diseases
11. Digital divide
12. Natural disaster prevention and mitigation
13. Reinventing taxation for the twenty-first century
14. Biotechnology rules
15. Global financial architecture
16. Illegal drugs
17. Trade, investment, and competition rules
18. Intellectual property rights
19. E-commerce rules
20. International labor and migration rules